

What is claimed is:

1. A method for generating an output image from a source image, wherein the colors of the output image are generated from a limited color palette, comprising:  
receiving an electronic source image containing a plurality of colors not all of which can be painted in the output image;  
receiving a dithering mask corresponding to the source image, wherein the dithering mask contains dithering levels specifying the degree to which colors in corresponding regions of the source image can be dithered to paint the output image; and  
generating the output image from the source image by variably dithering the colors of the output image on a regional basis according to the dithering levels specified in the received dithering mask.

2. The method of claim 1, wherein the received dithering mask is an alpha channel of the received electronic image.

3. The method of claim 1, wherein the dithering mask specifies regional dithering levels on a per pixel basis.

4. The method of claim 1, wherein the output image is a GIF or PNG8 image.

5. A method for generating an output image from a source image, wherein the colors of the output image are generated from a limited color palette, comprising for each pixel in the output image:  
receiving a true color from a corresponding pixel in the source image;  
receiving an accumulated color error from a plurality of neighboring pixels;  
calculating a target color from the true color and the accumulated color error;

7 finding a paint color in the limited color palette, wherein the paint color is the  
8 color in the limited color palette that is closest to the target color;  
9 painting the pixel with the paint color;  
10 receiving a dithering level from a corresponding pixel in a dithering mask  
11 associated with the source image, wherein the dithering level specifies on a per pixel basis  
12 the amount of the pixel's color error to diffuse to neighboring pixels; and  
13 calculating a color error from the target color, paint color, and dithering level.

1 6. The method of claim 5, wherein the accumulated color error received by an  
2 output image pixel from a plurality of neighboring pixels represents the accumulated  
3 difference between the target and paint colors used to paint the plurality of neighboring  
4 pixels that has been diffused to the current pixel by the dithering algorithm.

1 7. The method of claim 5, wherein the step of calculating a color error for each  
2 pixel in the output image comprises using the dithering level received from a corresponding  
3 pixel in the dithering mask to calculate a percentage of the difference between the pixel's  
4 target and paint colors.

1 8. The method of claim 5, wherein the step of calculating a target color for each  
2 pixel in the output image comprises adding the accumulated color error received from a  
3 plurality of neighboring pixels to the true color of a corresponding pixel in the source image.

1 9. A computer program product configured to generate an output image with a  
2 limited color palette from a source image, the computer program product comprising  
3 instructions operable to cause a computer program to:  
4 receive an electronic source image containing a plurality of colors not all of  
5 which can be painted in the output image;

6 receive a dithering mask corresponding to the source image, wherein the  
7 dithering mask contains dithering levels specifying the degree to which colors in  
8 corresponding regions of the source image can be dithered to paint the output image; and  
9 generate the output image from the source image by variably dithering the  
10 colors of the output image on a regional basis according to the dithering levels specified in  
11 the received dithering mask.

1 10. A computer program product configured to generate an output image with a  
2 limited color palette from a source image, the computer program product comprising  
3 instructions operable to cause a computer program for each pixel in the output image to :  
4 receive a true color from a corresponding pixel in the source image;  
5 receive an accumulated color error from a plurality of neighboring pixels;  
6 calculate a target color from the true color and the accumulated color error;  
7 find a paint color in the limited color palette, wherein the paint color is the  
8 color in the limited color palette that is closest to the target color;  
9 paint the pixel with the paint color;  
10 receive a dithering level from a corresponding pixel in a dithering mask  
11 associated with the source image, wherein the dithering level specifies on a per pixel basis  
12 the amount of the pixel's color error to diffuse to neighboring pixels; and  
13 calculate a color error from the target color, paint color, and dithering level.